

CLAIMS

What is claimed is:

1. An inflatable structure comprising a plurality of inflatable chambers and a flexible material secured to the chambers wherein a primary inflatable chamber communicates by way of air pathway connections to at least one secondary inflatable chamber.
2. The inflatable structure of Claim 1, wherein the air pathway connection further comprises a valve mechanism capable of restricting air flow from the secondary inflatable chamber to the primary inflatable chamber.
3. The inflatable structure of Claim 2, wherein the valve mechanism can be selectively operated to allow air to flow from the secondary inflatable chamber to the primary inflatable chamber.
4. The inflatable structure of Claim 3, wherein the valve mechanism comprises a clamp.
5. The inflatable structure of Claim 3, wherein the valve mechanism is selected from the group consisting of a gate valve, globe valve, ball valve, butterfly valve and check valve.
6. The inflatable structure of Claim 1, wherein the flexible material, the primary air chamber and the secondary air chamber form an aerodynamic wing capable of generating lifting force.
7. The inflatable structure of Claim 6, wherein the air pathway connection comprises a flexible tube having first and second ends wherein the first end is secured to a nipple in the primary air chamber and the second end is secured to a nipple in the secondary air chamber.

8. The inflatable structure of Claim 1, wherein the air pathway connection is configured to be an internal portion of a framework comprising the primary inflatable chamber and the secondary inflatable chamber.

9. An aerodynamic wing comprising an inflatable leading edge strut, at least one inflatable rib strut and an air pathway connection, wherein the air pathway connection allows air flow between the leading edge strut and a rib strut.

10. The aerodynamic wing of Claim 9, wherein the air pathway connection further comprises a valve mechanism capable of selectively restricting air flow between the rib strut and the leading edge strut.

11. The aerodynamic wing of Claim 10, wherein the valve mechanism comprises a clamp and the air pathway connection comprises a flexible tube.

12. A method for preparing a leading edge inflatable kite for use comprising the steps of:

- a) providing a kite having an inflatable leading edge strut, at least one inflatable rib strut and an air pathway connection that allow air to flow from the leading edge strut to the rib strut;
- b) supplying air to the leading edge strut;
- c) allowing air to travel from the leading edge into the rib strut; and
- c) operating a valve mechanism on the air pathway connection to restrict the flow of air from the rib strut to the leading edge strut.

13. The method of Claim 12, further comprising the steps deflating the kite by opening a valve in the leading edge and operating the valve mechanism on the air pathway connection to allow the flow of air from the rib strut to the leading edge strut.